

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Jas-Pal S. Badyal et al.

Application No.: To Be Assigned
(Divisional of 09/582,051)

Group Art Unit: 1762

Filed: Concurrently Herewith

Examiner: B. Pianalto

For: APPLYING FLUOROPOLYMER
FILM TO A BODY)

Attorney Docket No.: 9580-045-999

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
United States Patent and Trademark Office
Washington, D.C. 20231

Sir:

Prior to examination of the above-identified application, please consider and enter the following amendments and remarks into the file of the application.

AMENDMENTS

In the Title:

Please replace the title with the following: -- COATED MATERIALS --

In the Specification:

On page 1, immediately after the title, please insert the following:

-- This is a divisional of co-pending U.S. Application No. 09/582,051, filed January 25, 2001, now allowed, which is a 371 of International Application No. PCT/GB98/03838, filed December 18, 1998, both of which are incorporated herein in their entireties. --

Please replace the paragraph beginning at page 1, lines 25 through 31 with the following:

-- According to the present invention, a method of applying a fluoropolymer film to a porous or microporous or other body, comprises exposing the body to cold plasma

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polymerization using a pulsed gas regime to form adherent layer of unsaturated carboxylic (e.g. acrylic) acid polymer on the surface and then derivatising the polymer to attach a perfluoroalkyl group terminating in $-CF_3$ trifluoromethyl. A combination of electrical and gas pulsing may be used. --

Please replace the paragraph beginning at page 2, lines 1 through 3 with the following:

-- Preferably, the cold plasma polymerisation uses an unsaturated carboxylic acid. --

Please replace the paragraph beginning at page 2, lines 8 through 10 with the following:

-- The pulsed gas may be oxygen, or may be a noble or inert gas or H_2 , N_2 or CO_2 .
Alternatively, acrylic acid polymer precursor may be pulsed directly without a process gas. --

Please replace the paragraph beginning at page 2, lines 22 through 23 with the following:

-- The plasma power is preferably 1W to 100W, more preferably 1.5W to 7W. --

Please delete the paragraph beginning at page 10, lines 1 through 6.

In the Claims:

Please cancel claims 1-12 without prejudice and add the following new claims.

13. (New) A material comprised of a body to which a polymer film is applied by exposing the body to pulsed-gas cold-plasma polymerization of an unsaturated-carboxylic acid monomer.

14. (New) The material of claim 13, wherein the film is derivatized with a fluoro-substituted group.

15. (New) The material of claim 13, wherein the body is porous or microporous.

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16. (New) The material of claim 13, wherein the unsaturated-carboxylic acid monomer is acrylic acid.

17. (New) The material of claim 14, wherein the fluoro-substituted group comprises a terminal-trifluoromethyl group.

18. (New) The material of claim 14, wherein the fluoro-substituted group is a fluorinated surfactant.

19. (New) The material of claim 14, wherein the fluoro-substituted group is a perfluoroalkylamine.

20. (New) The material of claim 14, wherein the fluorinated group is a fluoroalkyl-trialkyl-ammonium salt.

21. (New) The material of claim 13, wherein the film is applied using a combination of electrical pulsing and gas pulsing.

22. (New) The material of claim 13, wherein the film is applied such that both the gas-on and gas-off times are within the range of about 0.1 microseconds to about 10 seconds.

23. (New) The material of claim 13, wherein the pulsed gas is oxygen.

24. (New) The material of claim 13, wherein the pulsed gas is a noble or inert gas or is hydrogen, nitrogen, or carbon dioxide.

25. (New) The material of claim 13, wherein the unsaturated-carboxylic acid monomer is pulsed directly without a process gas.

26. (New) The material of claim 13, wherein the plasma power applied is within the range of about 1 Watt to 100 Watts.

27. (New) The material of claim 13, wherein the plasma power applied is 1.5 Watts to 7 Watts.

REMARKS

Claims 13-27 appear in the application for the Examiner's review and consideration. Original claims 1-12 have been canceled without prejudice to Applicants' right to pursue the subject matter they recite in one or more continuation, divisional, or continuation-in-part applications.

All of new claims 13-27 are supported by the specification and claims as originally filed. For example, support for new claim 13 can be found in the instant specification in Figure 5, discussed at page 8, lines 1-5; Figure 6, discussed at page 8, lines 6-14; and Figure 8, discussed at page 8, lines 21-25. These Figures and their corresponding discussions describe pulsed-gas cold-plasma polymerization of acrylic acid to deposit a film of acrylic-acid polymer on a glass slide. New claims 14-27 are based on previous claims 1-12 modified by minor changes in wording, removal of multiple dependency, and deletion of reference to "a polymer of a perfluorocarbon monomer." No new matter has been added.

The specification has been amended as shown in Appendix A, attached hereto, to correspond to that of the '051 application. The title has been amended as shown in Appendix A to more accurately describe the claimed invention.

The Claims Should be Allowed

This application is a divisional of co-pending application no. 09/582,051 ("the '051 application"), now allowed. The claims of the '051 application recite a method of applying a film to a body. All of new claims 13-27 recite a material comprising a body to which a film is applied by the method recited by the claims allowed in the '051 application. Applicants therefore respectfully submit that all of the claims pending in this application are allowable.

No fee is believed due for this Preliminary Amendment. However, if a fee is due, please charge such fee to Pennie & Edmonds LLP Deposit Account No. 16-1150. A copy of this sheet is enclosed.

Respectfully submitted,

Date February 20, 2002


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Enclosure

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APPENDIX A
Marked-up Amendments

In the Specification:

On page 1, immediately after the title, please insert the following:

-- This is a divisional of co-pending U.S. Application No. 09/582,051, filed January 25, 2001, now allowed, which is a 371 of International Application No. PCT/GB98/03838, filed December 18, 1998, both of which are incorporated herein in their entireties. --

Please amend the paragraph beginning at page 1, lines 25 through 31 as follows:

According to the present invention, a method of applying a fluoropolymer film to a porous or microporous or other body, comprises exposing the body to cold plasma polymerization using a pulsed gas regime to form [either (i) an] adherent layer of unsaturated carboxylic (e.g. acrylic) acid polymer on the surface and then derivatising the polymer to attach a perfluoroalkyl group terminating in $-\text{CF}_3$ trifluoromethyl[, or (ii) a polymer of a perfluorocarbon monomer]. A combination of electrical and gas pulsing may be used.

Please amend the paragraph beginning at page 2, lines 1 through 3 as follows:

Preferably, the [cold method of applying a fluoropolymer film according to 1 and 2 wherein the] cold plasma polymerisation uses [a perfluorocarbon monomer or] an unsaturated carboxylic acid.

Please amend the paragraph beginning at page 2, lines 8 through 10 as follows:

The pulsed gas may be oxygen [(except when perfluorocarbon monomer is used)], or may be a noble or inert gas or H_2 , N_2 or CO_2 . Alternatively, acrylic acid polymer precursor [or perfluorocarbon monomer] may be pulsed directly without a process gas.

Please amend the paragraph beginning at page 2, lines 22 through 23 as follows:

The plasma power is preferably 1W to 100W, more preferably 1.5W to 7W[except possibly where perfluorocarbon monomer is used].

Please delete the paragraph beginning at page 10, lines 1 through 6.